

# VANTAGE LIGHTING

## TEST REPORT

**SCOPE OF WORK**

LED Performance Testing

**MODEL NUMBER**

SUR14L-Y90W-D1MV-35K

**PROJECT NUMBER**

G105471856

**REPORT NUMBER**

105471856CRT-012

**ISSUE DATE**

1/16/2024

**REVISED DATE**

1/19/2024

**TEST DATES**

1/12/2024 - 1/15/2024

**DOCUMENT CONTROL NUMBER**

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

105471856CRT-012

**MODEL NUMBER(s)**

SUR14L-Y90W-D1MV-35K

**REPORT RENDERED TO:**

VANTAGE LIGHTING  
181 NARRAGANSETT PARK DRIVE  
EAST PROVIDENCE, RI 01916  
USA

**STATEMENT OF LIMITATION**

NVLAP Lab Code 100402-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. government.

**AUTHORIZATION**

The testing performed was authorized by signed quote number Qu-01343314-0.

**TEST STANDARDS**

ANSI/IES LM-79-19: Optical and Electrical Measurements of Solid State Lighting Products

IES LM-79-08: Electrical and Photometric Measurements of Solid State Lighting

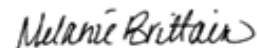
ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

In Charge of Testing:

Reviewer:



Jacki Swiernik  
Staff Engineer  
Lighting Division



Melanie Brittain  
Senior Associate Engineer  
Lighting Division

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## SAMPLE INFORMATION

REPORT NO. 105471856CRT-012

### ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received Date	Sampling Date
1	CRT2401101319-001	SUR14L-Y90W-D1MV-35K	1x4 recessed troffer with diffuse lens (option 3)	Prototype	1/10/2024	N/A

### TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	SUR14L-Y90W-D1MV-35K	1

### SAMPLE PHOTOS



**SUMMARY**

**REPORT NO. 105471856CRT-012**

**PRODUCT INFORMATION AND SUMMARY OF DATA**

<b>Test Configuration 1</b>	
<b>Product Model No.:</b>	SUR14L-Y90W-D1MV-35K
<b>Product Description:</b>	1x4 recessed troffer with diffuse lens (option 3)
<b>LED Board Model No.:</b>	Signify FO Strip PR 22in 2200lm 835 LV6
<b>Driver Model No.:</b>	Acuity Optotronic OTi85WUNV-2A3-DIM-1

<b>Criteria</b>	<b>Results</b>	
	<b>Goniophotometer</b>	<b>Integrating Sphere</b>
Light Output (lumens)	9718.2	9685.3
Input Power (W) @ 120 (Vac)	87.84	87.93
Luminous Efficacy (lm/W)	110.6	110.1
Input Power Factor ( ) @ 120 (Vac)	0.994	0.995

<b>Criteria</b>	<b>Results</b>
Input ATHD (%) @ 120 (Vac)	9.92
Correlated Color Temperature (K)	3422
Color Rendering Index - Ra ( )	83.5
Color Rendering Index - R9 ( )	9.7
Duv ( )	0.000
Chromaticity Coordinate (x)	0.410
Chromaticity Coordinate (y)	0.393
Chromaticity Coordinate (u')	0.238
Chromaticity Coordinate (v')	0.513

**TEST METHODS**

**SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS**

No seasoning was performed in accordance with ANSI/IES LM-79-19

**DUT SAMPLING METHOD**

For testing plans, program requirements, or shipments requiring sampling of DUTs or components, the selections for each test were random. All samples are marked with control numbers regardless of being tested.

**INTEGRATING SPHERE TESTING**

A spectroradiometer and integrating sphere were used to measure the spectral power distribution for photometric and colorimetric data of the DUT. Electrical measurements of the unit were measured using a power analyzer. Each DUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature and relative humidity was measured at 25°C ± 1.2°C and 10-65% respectively at a position inside of the sphere within 1.5m and at equal height of the DUT. Stabilization procedures to LM-79-19 were followed. The DUT was mounted in a 4π configuration.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the DUT. Electrical measurements of the unit were measured using a power analyzer. Each DUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature and relative humidity was measured at 25°C ± 1.2°C and 10-65% respectively at a position within 1.5m and at equal height of the DUT. Stabilization procedures to LM-79-19 were followed. The test distance was ≥ 5x the longest luminous dimension of the DUT.

ANSI/IES Technical Memorandums (TM) reported are not NVLAP accredited

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

**REPORT NO. 105471856CRT-012**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	SUR14L-Y90W-D1MV-35K	NA

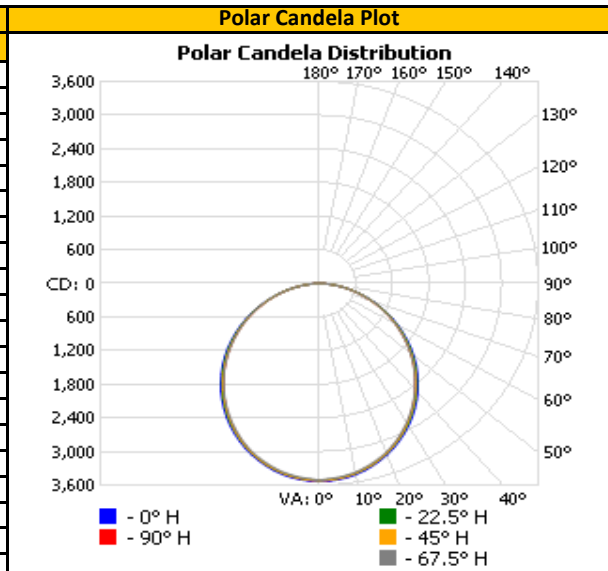
**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS**

Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Select One	120.00	736.2	87.84	0.994

Light Output (lm)	Efficacy (lm/W)
9718.2	110.6

**LUMINOUS INTENSITY SUMMARY (candela)**

Vertical Angle (°)	Horizontal				
	0	22.5	45	67.5	90
0	3510	3510	3510	3510	3510
5	3515	3492	3496	3475	3503
10	3464	3439	3441	3419	3441
15	3374	3352	3352	3325	3354
20	3255	3232	3227	3204	3227
25	3107	3081	3073	3050	3069
30	2933	2907	2892	2867	2886
35	2735	2706	2690	2665	2680
40	2519	2486	2468	2446	2455
45	2280	2252	2229	2210	2217
50	2032	2002	1977	1960	1968
55	1765	1740	1718	1701	1710
60	1492	1472	1454	1441	1444
65	1215	1196	1181	1177	1175
70	941	929	921	913	911
75	671	663	661	653	648
80	418	412	413	405	400
85	183	181	181	175	174
90	0	0	0	0	0
95	0	0	0	0	0
100	0	0	0	0	0
105	0	0	0	0	0
110	0	0	0	0	0
115	0	0	0	0	0
120	0	0	0	0	0
125	0	0	0	0	0
130	0	0	0	0	0
135	0	0	0	0	0
140	0	0	0	0	0
145	0	0	0	0	0
150	0	0	0	0	0
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0



Full luminous intensity matrix found in .IES file

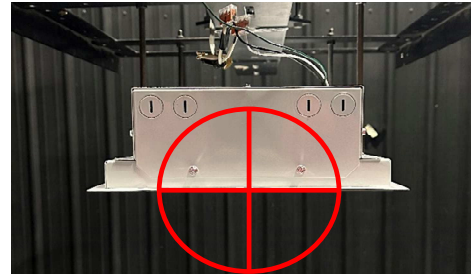
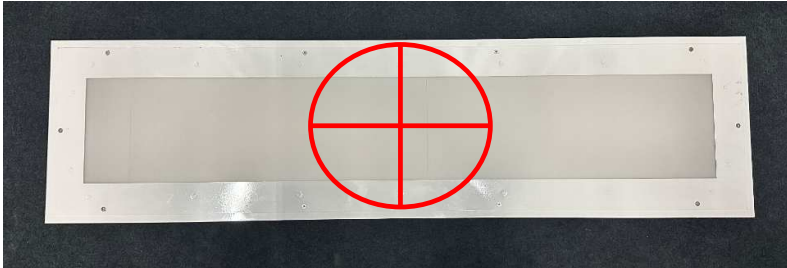
**REPORT NO. 105471856CRT-012**

**ORIENTATION AND ALIGNMENT OF DUT**

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
3.56	0.56	0.00
0°-180° H	90°-270° H	0°-180° V

Test Distance (ft)
29.2

**PHOTOMETRIC CENTER OF DUT**



**REPORT NO. 105471856CRT-012**

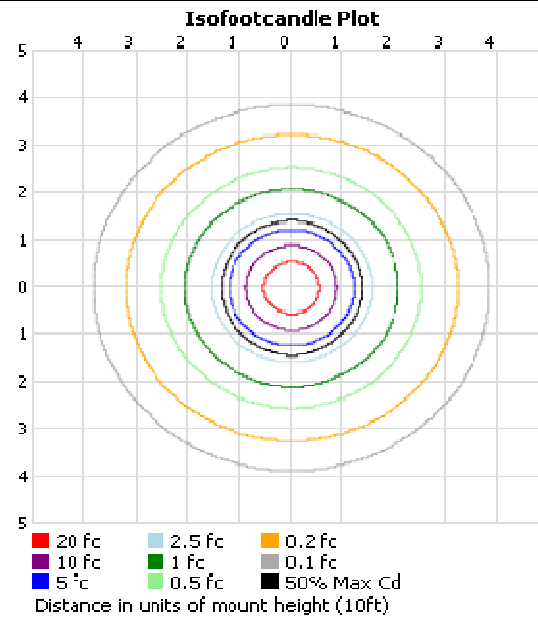
**ILLUMINANCE SUMMARY**

**Illuminance - Cone Of Light      Isoillumination Plot**

**Illuminance at a Distance**

	Center Beam fc	Beam Width	
1.7ft	1,215 fc	4.9 ft	4.7 ft
3.3ft	322 fc	9.4 ft	9.1 ft
5.0ft	140 fc	14.3 ft	13.7 ft
6.7ft	78.2 fc	19.2 ft	18.4 ft
8.3ft	51.0 fc	23.7 ft	22.8 ft
10.0ft	35.1 fc	28.6 ft	27.5 ft

■ Vert. Spread: 110.1°  
■ Horiz. Spread: 107.9°



**ZONAL LUMENS**

**Zonal Lumen Summary**

Zone (°)	Lumens	Luminaire
0-30	2,690.7	27.7%
0-40	4,374.3	45.0%
0-60	7,638.8	78.6%
60-90	2,079.3	21.4%
70-100	903.1	9.3%
90-120	0.0	0.0%
0-90	9,718.2	100.0%
90-180	0.0	0.0%
0-180	9,718.2	100.0%

Zone (°)	Lumens	Total	Zone (°)	Lumens	Total
0-10	331.6	3.4%	90-100	0.0	0.0%
10-20	944.0	9.7%	100-110	0.0	0.0%
20-30	1415.2	14.6%	110-120	0.0	0.0%
30-40	1683.6	17.3%	120-130	0.0	0.0%
40-50	1723.4	17.7%	130-140	0.0	0.0%
50-60	1541.2	15.9%	140-150	0.0	0.0%
60-70	1176.2	12.1%	150-160	0.0	0.0%
70-80	698.3	7.2%	160-170	0.0	0.0%
80-90	204.9	2.1%	170-180	0.0	0.0%

**INTEGRATING SPHERE TESTING**

**REPORT NO. 105471856CRT-012**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	SUR14L-Y90W-D1MV-35K	NA

**PHOTOMETRIC, RADIOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS**

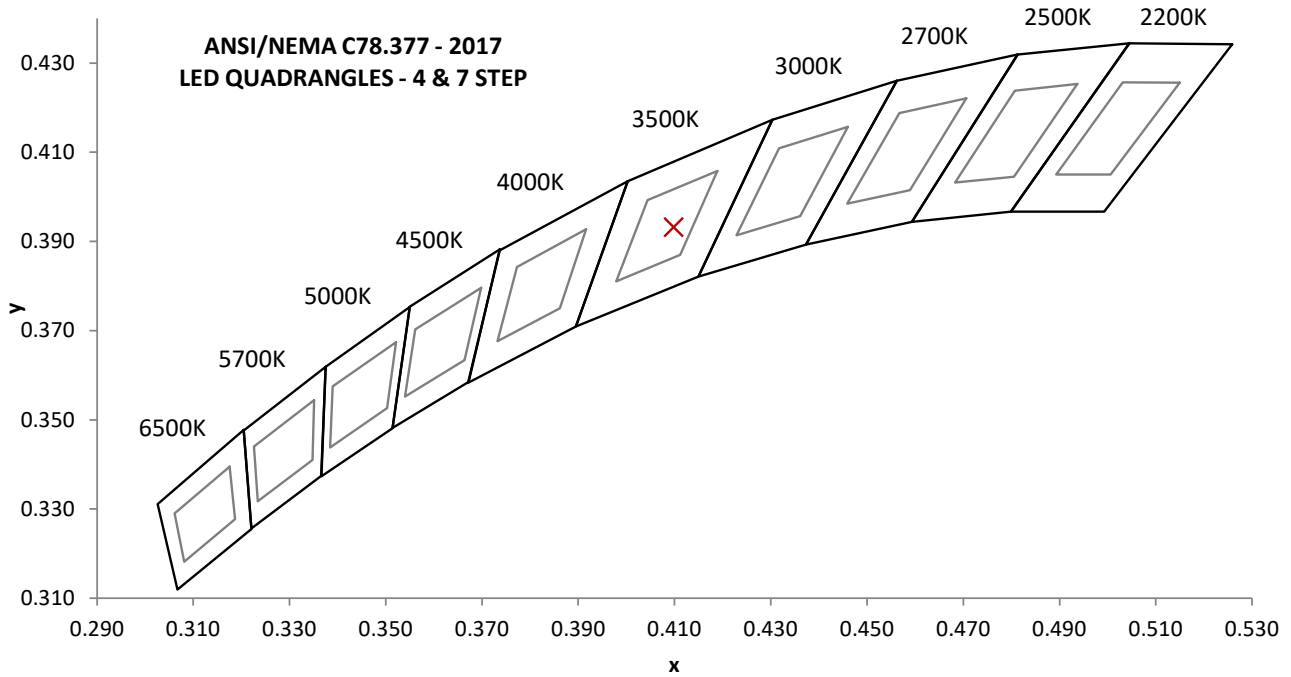
Base Orientation
Select One

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
120.08	736.2	87.93	0.995	9.92

Measured at 120.08(Vac)

Light Output (lm)	Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
9685.3	110.1	3422	83.5	9.7

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0001	0.410	0.393	0.238	0.513

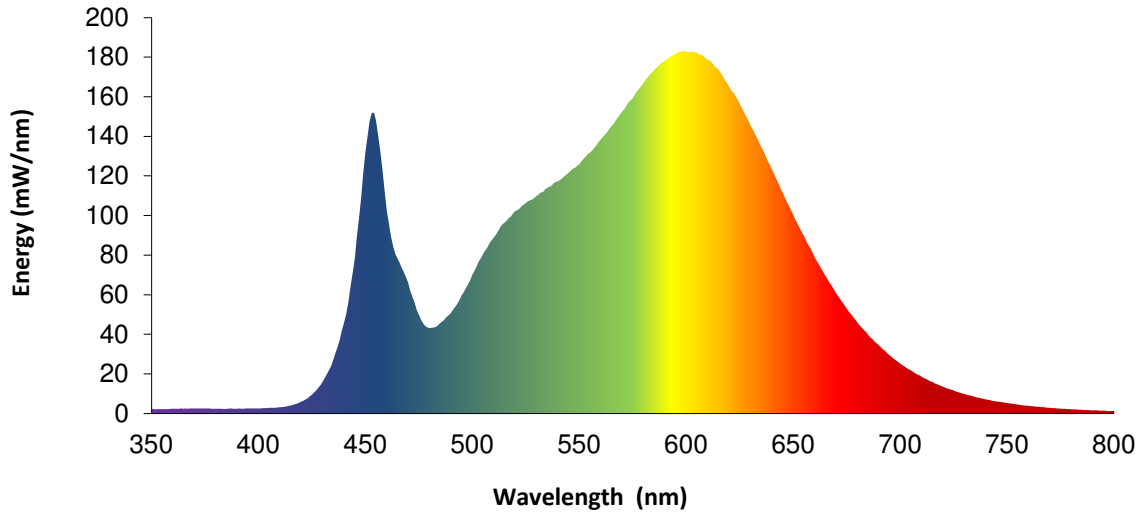




SPECTRAL POWER DISTRIBUTION

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	2.3	460	102.3	570	152.4	680	45.9
355	2.3	465	78.3	575	159.2	685	39.7
360	2.4	470	65.9	580	167.0	690	34.4
365	2.3	475	49.9	585	173.5	695	29.5
370	2.6	480	43.1	590	178.3	700	25.2
375	2.5	485	45.6	595	181.7	705	21.7
380	2.4	490	50.7	600	182.6	710	18.5
385	2.4	495	59.7	605	182.3	715	15.9
390	2.4	500	70.1	610	178.6	720	13.6
395	2.5	505	80.6	615	173.8	725	11.5
400	2.6	510	88.9	620	165.0	730	9.8
405	2.9	515	96.4	625	156.4	735	8.4
410	3.1	520	102.2	630	145.7	740	7.1
415	4.0	525	106.2	635	134.6	745	6.1
420	5.9	530	109.9	640	123.5	750	5.2
425	9.5	535	113.9	645	111.5	755	4.5
430	16.0	540	117.4	650	100.3	760	3.8
435	27.2	545	121.7	655	89.6	765	3.3
440	45.8	550	126.0	660	78.9	770	2.8
445	78.4	555	131.7	665	69.7	775	2.5
450	132.1	560	138.3	670	60.6	780	2.1
455	148.1	565	145.1	675	53.0	---	---

Spectral radiant flux was measured by 1nm increments. 1nm data is on file.



Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only

**EQUIPMENT LIST**

**REPORT NO. 105471856CRT-012**

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	LSI Type C Goniophotometer System	6440	---	11/1/2023	2/1/2024
2	Elgar AC Power Supply	CW1251	---	VBU	VBU
3	Yokogawa Power Analyzer	WT210	E464	6/21/2023	6/21/2024
4	Traceable Hygrothermometer	4800	L206	3/7/2023	3/7/2024
5	Omega Thermometer	DPI8-C24	M263	3/9/2023	3/9/2024
6	Tape Measure	Crescent	---	9/21/2021	9/21/2024
7	Elgar AC Power Supply	CW1251	---	VBU	VBU
8	Sorenson DC Power Supply	XFR 150-8	---	VBU	VBU
9	Traceable Thermometer	4800	L204	3/7/2023	3/7/2024
10	Yokogawa Power Analyzer	WT1600	E462	7/31/2023	7/31/2024
11	Fluke Thermometer	53 II	N1324	6/28/2023	6/28/2024
12	Fisher Scientific Stopwatch	14-649-9	N1315	3/2/2023	3/2/2024
13	Current Monitor	411	A197	8/26/2021	8/26/2024
14	3M Integrating Sphere Spectrometer System	CDS 2600	L231	1/10/2024	4/10/2024

The AC power supplies used for testing have a crest factor capable of 0-3.5

**REVISION HISTORY**

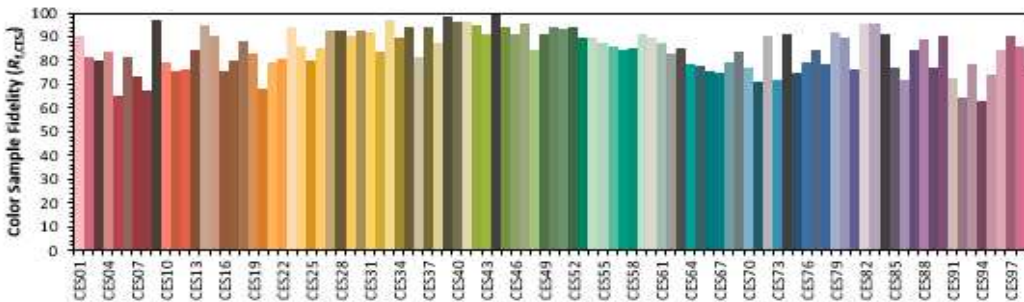
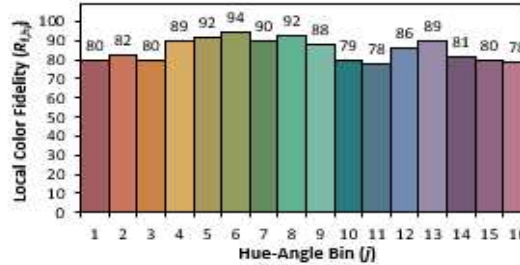
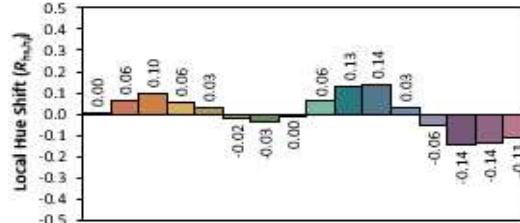
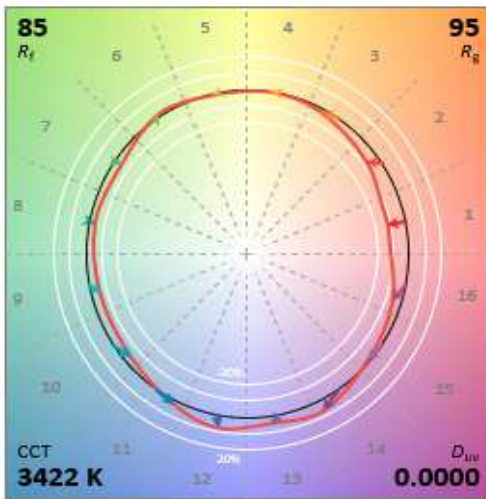
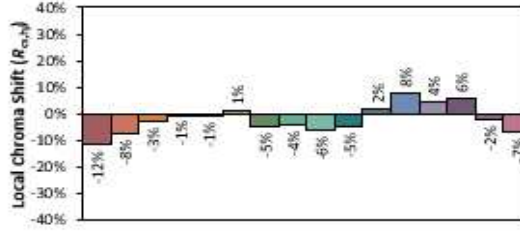
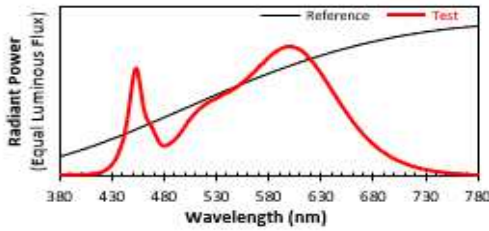
#	Revision Date	Updated By	Reviewed By	Description of Change
1	1/19/2024	Jacki Swiernik JS	Melanie Brittain MB	Added TM-30 metrics by client request
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ANNEX A - IES TM-30 CALCULATIONS

REPORT NO. 105471856CRT-012

Test Configuration	Tested Model No.	Pass/Fail/NA
1	SUR14L-Y90W-D1MV-35K	NA

TM-30 REPORT



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.4099  
 $y$  0.3931  
 $u'$  0.2377  
 $v'$  0.5129

CIE 13.3-1995 (CRI)  
 $R_a$  84  
 $R_g$  10